Programming Task 2

Description

Write a program that will output a valid route one could follow to collect all specified items within a map. The map is a json description of a set of rooms with allowed path and contained object.

Inputs:

- json representation of map
- starting room
- list of object to collect

JSON MAP Example:

```
{
id: Integer,
name: String,
north: Integer, //referring to a connected room
south: Integer, //referring to a connected room
west: Integer, //referring to a connected room
east: Integer, //referring to a connected room
objects: List
}
```

```
Objects Object type allowed fields,
{name: String} //Object Name
```

The inputs are contained in a JSON map file which has this format:

```
{
starting_map_id: Integer,
objects: List of Object,
rooms: JSON MAP Object
}
```

Goal

The Algorithms takes as input a directory and runs the 'Solver' algorithm on each map.
The Solver outputs:

1. A Solution: Find or Not Found, based on the fact that all the objects described in the object list can be collected exploring the maze
2. A Path: The path explored in order to determine if a Solution was found or not

Possible scenarios:

1. All the objects listed are in the Map: the solution will be eventually found

2. The Object list is empty: no objects to collect means a solution is always found

3. The Object list contains at least one element not present in the map: the algorithm won't find a solution and will terminate after it completely explores all the rooms in the map -> algorithmic completeness

Sample Output

Salmple output for Maps contained in `/mnt/maps/` :

```
~~~~~~~~~ CALLING SOLVER FOR MAP FILE: map.json ~~~~~~~~~

------------ ALL OBJECTS FOUND: True ------------
Room ID         Room                    Objects in the Room
2               Dining Room
5               Bedroom                     Pillow
6               Bathroom
4               Sun Room
2               Dining Room
1               Hallway
7               Living room              Potted Plant
4               Sun Room
6               Bathroom
5               Bedroom                     Pillow
2               Dining Room
3               Kitchen                     Knife
----------------------------------------------------

~~~~~~~~~ SOLVED FOR MAP FILE: map.json ~~~~~~~~~
```